

*"High-Contrast 3.8 Micron Imaging of the Brown Dwarf/Planet-Mass
Companion to GJ 758"*

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Abstract -- We present L' band (3.8 Micron) MMT/Clio high-contrast imaging data for the nearby star GJ 758, which was recently reported by Thalmann et al. (2009) to have one -- possibly two-- faint comoving companions (GJ 758B and ``C'', respectively). GJ 758B is detected in two distinct datasets. Additionally, we report a \textit{possible} detection of the object identified by Thalmann et al as ``GJ 758C'' in our more sensitive dataset, though it is likely a residual speckle. However, if it is the same object as that reported by Thalmann et al. it cannot be a companion in a bound orbit. GJ 758B has a H-L' color redder than nearly all known L--T8 dwarfs. Based on comparisons with the COND evolutionary models, GJ 758B has $T_{\text{e}} \sim 560 \text{ K}$ (+150 K, -90 K) and a mass ranging from $\sim 10\text{--}20 \text{ M}_{\text{J}}$ if it is $\sim 1 \text{ Gyr}$ old to $\sim 25\text{--}40 \text{ M}_{\text{J}}$ if it is 8.7 Gyr old. GJ 758B is likely in a highly eccentric orbit, $e \sim 0.73$ (+0.12,-0.21), with a semimajor axis of $\sim 44 \text{ AU}$ (+32 AU, -14 AU). Though GJ 758B is sometimes discussed within the context of exoplanet direct imaging, its mass is likely greater than the deuterium-burning limit and its formation may resemble that of binary stars rather than that of jovian-mass planets.